

We Claim:

5 *Sub 1* 1. A coupler knuckle casting having an enhanced bearing surface area, said coupler knuckle casting utilized in a railway freight car coupler, said coupler knuckle casting having said enhanced bearing surface area comprising:

(a) a tail section;

(b) a hub section, said hub section having a pivot pinhole formed therein, said pivot pinhole having generally straight cylindrical sidewalls;

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(c) a front face section connected to said hub section, said front face section including a nose section and a pulling face portion formed inwardly from said nose section, at least a portion of said front face portion and said nose section includes an enhanced bearing surface area which includes a substantially flat portion disposed substantially in a vertical direction and which is substantially arcuate in a horizontal direction, said substantially flat portion extending for a predetermined distance in said vertical direction and for a predetermined length along said horizontal direction; and

20 (d) a transition section joining said tail section to said hub section, said transition section including a top metal section and a bottom metal section extending toward each other.

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2. A coupler knuckle casting having an enhanced bearing surface area, according to claim 1, wherein said predetermined distance said substantially flat portion extends in said vertical direction is generally in a range of between about 3.5 inches and at about 7.0 inches.

3. A coupler knuckle casting having an enhanced bearing surface area, according to claim 2, wherein said predetermined distance said substantially flat portion extends in said vertical direction is generally in a range of between about 4.0 inches and at about 5.5 inches.

4. A coupler knuckle casting having an enhanced bearing surface area, according to claim 3, wherein said predetermined distance said substantially flat portion extends in said vertical direction is generally in a range of between about 4.0 inches and at about 4.5 inches.

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5. A coupler knuckle casting having an enhanced bearing surface area, according to claim 1, wherein said coupler knuckle is cast steel.

6. A coupler knuckle casting having an enhanced bearing surface area, according to claim 4, wherein said coupler knuckle is cast steel.

5 7. A coupler knuckle casting having an enhanced bearing surface area, according to claim 1, wherein said predetermined length along said horizontal direction which is substantially arcuate extends over at least a portion of said hub section, said front face section and at least a portion of said nose section.

8. A coupler knuckle casting having an enhanced bearing surface area, according to claim 4, wherein said predetermined length along said horizontal direction which is substantially arcuate extends over at least a portion of said hub section, said front face section and at least a portion of said nose section.

9. A coupler knuckle casting having an enhanced bearing surface area, according to claim 6, wherein said predetermined length along said horizontal direction which is substantially arcuate extends over at least a portion of said hub section, said front face section and at least a portion of said nose section.

10. A coupler knuckle casting having an enhanced bearing surface area, according to claim 1, wherein said enhanced bearing surface area is hardened to a predetermined hardness.

5 11. A coupler knuckle casting having an enhanced bearing surface area, according to claim 10, wherein said predetermined hardness is at least about 40 Rockwell C.

12. A coupler knuckle casting having an enhanced bearing surface area, according to claim 1, wherein said nose section includes a generally cylindrical opening formed in an end portion thereof.

13. In combination with a railway freight car coupler, the improvement comprising a coupler knuckle casting having an enhanced bearing surface area, said coupler knuckle casting having:

(a) a tail section;

(b) a hub section, said hub section having a pivot pinhole formed therein, said pivot pinhole having generally straight cylindrical sidewalls;

(c) a front face section connected to said hub section, said front face section including a nose section and a pulling face portion formed inwardly from said nose section, at least a

portion of said front face portion and said nose section includes an enhanced bearing surface area which includes a substantially flat portion disposed substantially in a vertical direction and which is substantially arcuate in a horizontal direction, said substantially flat portion extending for a predetermined distance in said vertical direction and for a predetermined length along said horizontal direction; and

(d) a transition section joining said tail section to said hub section, said transition section including a top metal section and a bottom metal section extending toward each other.

14. The combination, according to claim 13, wherein said nose section includes a generally cylindrical opening formed in an end portion thereof.

15. In combination with an existing railway freight car coupler, the improvement comprising retrofitting a coupler knuckle casting having an enhanced bearing surface area into said existing railway freight car coupler, said coupler knuckle casting having:

(a) a tail section;

(b) a hub section, said hub section having a pivot pinhole formed therein, said pivot pinhole having generally straight cylindrical sidewalls;

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(c) a front face section connected to said hub section, said front face section including a nose section and a pulling face portion formed inwardly from said nose section, at least a portion of said front face portion and said nose section includes an enhanced bearing surface area which includes a substantially flat portion disposed substantially in a vertical direction and which is substantially arcuate in a horizontal direction, said substantially flat portion extending for a predetermined distance in said vertical direction and for a predetermined length along said horizontal direction; and

(d) a transition section joining said tail section to said hub section, said transition section including a top metal section and a bottom metal section extending toward each other.

16. The combination, according to claim 15, wherein said nose section includes a generally cylindrical opening formed in an end portion thereof.